REMARKS

Claims 61 and 68 are amended, and new claim 70 is added. Claims 61-65 and 68-70 are pending in the application.

The pending claims stand finally rejected over the combination of Ovshinsky, Schultze and Heath. Applicant requests reconsideration of such rejections.

Referring to claim 61, which is the only independent claim in the application, such recites a construction in which n-type conductively-doped silicon and porous p-type doped silicon are both provided within trenches in an insulative material, active molecular switchable memory material is provided within pores of the p-type doped porous silicon, and a protective wiring layer is over and directly against the p-type doped porous silicon and active molecular switchable memory material therein.

Claim 61 is allowable over the cited references for at least the reason that the references do not suggest or disclose the recited structure having both n-type conductively-doped silicon and p-type doped porous silicon within trenches in an insulative material. Claim 61 is further allowable over the cited references for at least the reason that the references do not suggest or disclose the recited active molecular switchable material within the pore of the p-type doped porous silicon that is directly against n-type conductively-doped silicon, and the conductive wiring layer over and directly against the recited p-type doped porous silicon and active molecular switchable material.

The Examiner cites Ovshinsky for disclosing a construction in which a conductive wiring layer is formed within trenches and a switchable memory material is formed over the wiring layer and also within the trenches. The Examiner recognizes that the wiring layer of

Ovshinsky does not comprise n-type conductively-doped silicon, and the molecular memory switchable material of Ovshinsky is not within pores of p-type doped porous silicon. Rather, the wiring layer of Ovshinsky that is formed within the trench (the layer 8A of Ovshinsky's Fig. 1) is disclosed to be a thin film comprising one or more elements selected from the group consisting of titanium, vanadium, chromium, zirconium, niobium, molybdenum, hafnium, tantalum and tungsten (see, for example, column 9, line 64 through column 10, line 1), and the molecular switchable material 36 within the trench of Ovshinsky is disclosed to be a composite of phase change material and inactive dielectric material formed in a multi-layered structure (see, for example, col. 8, lines 50-59 of Ovshinsky). The Examiner thus cites Schultze for showing that it was known in the art to form molecular switchable material within pores of porous silicon, and cites Heath for disclosing that it was known to utilize n-type doped silicon together with molecular switchable materials.

Applicant notes, however, that the porous silicon of Schultze is not disclosed to be formed together with n-type doped silicon in a trench, but rather is disclosed to be formed either against bulk silicon or against an insulating layer (see, for example, page 1374 of Schultze and the first paragraph of section 2.1).

Applicant also notes that the n-type doped silicon of Heath is not formed within a trench, but rather is a wiring layer 12 projecting upwardly from the surface of a substrate 10 (see, for example, Figs. 1A-3 of Heath), and Applicant further notes that Heath does not show or suggest porous p-type doped silicon adjacent n-type conductively-doped silicon. Rather, Heath describes the molecular switchable material as being a layer 13 that is

preferably either a molecular layer, or a layer that is only a few molecules thick, containing molecular switchable material (see, for example, col. 6, lines 50-57 of Heath).

Thus, Applicant notes that not one of the Examiner's references suggests or discloses the recited limitation of claim 61 of having both n-type conductively-doped silicon and p-type doped porous silicon within a trench, and certainly none of the references suggests or discloses the limitation of the n-type conductively-doped silicon that is within the same trench as p-type doped porous silicon having molecular switchable memory material within its pores.

The Examiner contends that applicant is attacking the references individually, rather than appreciating the combination of the references. Applicant respectfully submits that Applicant is not attacking the references individually when Applicant notes that there is no suggestion within any of the references for the limitation of p-type doped porous silicon and n-type conductively-doped silicon within trenches. Rather, Applicant is stating that such recited feature could not be suggested by the combination of references when none of the references individually suggests or discloses such recited feature.

Additionally, Applicant notes that there are further reasons for which the cited combination of Ovshinsky, Schultze and Heath does not suggest or disclose the recited subject matter of claim 61. For instance, a person of ordinary skill in the art looking toward the combination of Ovshinsky, Schultze and Heath would not conclude that it is suggested to form the claim 61 recited structure having active molecular switchable memory material within pores of p-type doped porous silicon in a construction in which the p-type doped porous silicon is within a common trench as n-type conductively-doped silicon. Rather, the

person would look toward Schultze and conclude that systems comprising p-type doped porous silicon with molecular switchable material therein are suitable for constructions in which porous silicon will be provided adjacent bulk silicon or insulative materials, but would not find any teaching or suggestion that the porous silicon could be formed within a trench; and certainly would not find any teaching or suggestion that the porous silicon would be formed in a common trench with n-type conductively-doped silicon.

The person could look toward Ovshinsky to see that molecular switchable materials had been provided within trenches, but such person of skill in the art would also learn from Ovshinsky that it can be advantageous to utilize a heterogeneous mixture of active phase-change material and inactive dielectric material within the trenches. The person would not have a reason to utilize the p-type porous silicon matrix of Schultze in place of the heterogeneous mixture of active phase change material and inactive dielectric material of Ovshinsky, and there would be no expectation that the porous p-type silicon of Schultze would work in the application of Ovshinsky for delivering electrical signals between plates consisting of titanium, vanadium, chromium, zirconium, niobium, molybdenum, hafnium, tantalum and tungsten in applications in which the porous material had a thickness of from about 200Å to about 5000Å (see, for example, col. 9 line 64 through col. 10 line 9 of Ovshinsky), or applications in which the porous p-type silicon having the molecular switchable material was substituted for Ovshinsky's memory material for transferring electrical energy from field emitter tips (see, for example, col. 11, line 28 through col. 12, line 6), or in applications of Ovshinsky where the molecular switchable material is to be utilized as a tunneling contact (see, for example, col. 12, line 18 through col. 12, line 27).

The person of ordinary skill in the art looking further toward Heath would not find teaching or suggestion that the n-type conductively-doped silicon disclosed therein could be formed in the trench of Ovshinsky in place of the conductive metal-containing plate 8A of Ovshinsky to form a working device.

The Examiner appears to be contending that numerous components of Ovshinsky's device can be substituted with completely different materials than those taught by Ovshinsky, and that such would be obvious modifications. Applicant respectfully submits that it is not obvious to substitute porous p-type silicon having molecular switchable memory material therein of the type taught in Schultze or the heterogeneous mixture of phase-change materials of Ovshinsky, and to expect that the device of Ovshinsky will still work as intended. Porous p-type silicon is a completely different material than the heterogeneous materials taught in Ovshinsky, and it is just as likely that the substitute of porous p-type silicon for the materials of Ovshinsky will detrimentally impact the intended function of Ovshinsky as it is that such materials will improve the device of Ovshinsky. Such is not a suggestion for modification of Ovshinsky. Similarly, there is no teaching within the Examiner's cited references that utilization of n-type conductively-doped silicon of Heath in substitution of the metal-containing plate 8A of Ovshinsky would improve performance of the Ovshinsky or even maintain performance of the device. Rather, the n-type doped silicon is a significantly different material than the metal-containing material than the metal-containing materials described in Ovshinsky, and would be expected to significantly alter performance characteristics of Ovshinsky device.

For the above-discussed reasons, claim 61 is not obvious over the combination of Ovshinsky, Schultze and Heath. Applicant therefore respectfully requests allowance of claim 61 in the Examiner's next action.

Claims 62-65 and 68-70 depend from claim 61, and are therefore allowable for at least the reasons discussed above regarding claim 61.

Pending claims 61-65 and 68-70 are allowable for the reasons discussed above, and Applicant therefore requests formal allowance of such claims in the Examiner's next action.

Respectfully submitted,

Dated: 6/9/05 By: _____

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